CHAPTER XX

THE ENHANCEMENT OF THE OXIDISING ACTION OF THE FLAMR

IN practical working, it often appears impossible to avoid an excess of reducing agents in the charge, and in such eases the resultant lengthening of the " ehargedure " makes itself felt in the most sensible manner. One is bound to look about for an aid which permits of the rapid performance of the elimination of the excess mentioned. The experiments, according to the example of the Bessemer process, of blowing air in or upon the impure metal, brought so many disadvantages that one was obliged to employ an alternative. There remained only the possibility of employing oxygen in the form of chemical compounds and this means (in the form of hammer Blag, or natural iron ores) has been used since the earliest stages of the open-hearth process. One was, however, for a long time in the dark as to the action of such kinds of additions. The cause may well be sought in the assumption so generally circulated in a peculiar way, that the iron protoxide present in all final slags must owe its origin entirely to iron ore. Thereby is overlooked that llame action must always produce iron oxide and the slag cannot exist without it. In all determinations of the useful effect of iron oxide added, one always found them of varied and generally very small values. II. II. Campbell says as to this on p. 184 of his treatise :—

" This quantity (of iron ore necessary for conferring fluidity on a viscous slag) will be a constant under given conditions, no matter how much ore is afterwards needed, it might be 90 per cent, of a small addition and only 10 per cent, of a large one."

It is obvious that it appears more economical to create the iron content of the slag by means of cheap ore, instead of by combustion of the costly metallic charge. On this ground, iron ore additions are often made (also experimentally in